

# ANALYSIS OF THE INFLUENCE OF KNOWLEDGE MANAGEMENT PRACTICES AND SYSTEMS ON FIRM PERFORMANCE

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## ABSTRACT

*This study examines the impact of effective knowledge management practices on a company's performance. Structural equation modeling (SEM) was used to test the proposed model. We surveyed 310 senior and middle-level managers from Indian IT companies using a simple random sampling method. The analysis showed that knowledge identification, acquisition, storage, dissemination, and application all have a significant positive influence on efficient knowledge management. Additionally, financial performance, firm productivity, employee performance, innovativeness, and customer satisfaction all have a significant positive influence on organizational performance. The findings suggest that knowledge management practices can lead to improved knowledge management within a company, which can in turn directly improve the company's performance.*

**Key words:** Knowledge management, Knowledge management systems, KM, KMS, Firm performance, Information Technology.

## INTRODUCTION

In today's rapidly evolving technological landscape, organizations face increasing pressure to maintain their competitive edge. With knowledge replacing labor, land, and capital as a crucial production factor (Alavi & Leidner, 2001a), effectively managing internal expertise is key. However, the tacit and explicit knowledge residing within an organization is often intangible and challenging to grasp, store, and leverage (Nonaka & Takeuchi, 1995). Valuable knowledge embedded in employees' minds can easily disappear with their departure (Szulanski, 2003).

Knowledge management is a strategic approach to optimizing knowledge acquisition, integration, and utilization within an organization (Argote & Ingram, 2000). By systematically creating, accumulating, and disseminating knowledge, KM empowers organizations to achieve their goals and enhance performance (Zack, 2013). Implementing strong KM practices has a demonstrably positive impact on organizational success, offering a clear advantage in today's competitive environment (Boisot & Jay, 1995).

Organizations striving for sustained competitiveness recognize the critical role of both information and actively cultivated knowledge (Sveiby, 1997). KM provides valuable insights into both internal experiences and external resources, equipping organizations with the necessary capabilities to excel. Key KM activities like knowledge identification, acquisition, storage,

dissemination, and application empower organizations to achieve their full potential (Gupta & Govindarajan, 2000). Implementing an efficient knowledge management system (KMS) foster improved problem-solving, dynamic learning, strategic planning, and decision-making, ultimately leading to enhanced organizational performance (Alavi & Leidner, 2001). Ultimately, KM's core objective is to ensure the rapid, effective, and innovative utilization of resources, propelling organizations forward in the dynamic marketplace.

## Literature Review and Hypotheses Development

The importance of knowledge management (KM) practices has been widely recognized in the literature, with key processes identified as knowledge identification, acquisition, storage, dissemination, and application (Scarborough & Swan, 2001). These practices directly contribute to an organization's learning process, shaping its culture and strategic decision-making (Senge, 1990). Bhatti and Qureshi (2000) further emphasize KM as a tool for unlocking the potential of both tacit and explicit knowledge residing within individuals, groups, and organizations, transforming it into valuable organizational assets. Such codified knowledge then contributes to inform decision-making at all levels (Nonaka & Takeuchi, 1995).

Dahiya et al. (2008) propose a comprehensive view of KM as a "systematic and integrated management strategy" encompassing knowledge development, transfer, transmission, storage, and implementation, ultimately aimed at enhancing organizational efficiency and effectiveness through its human capital (Teece, 2007). This aligns with the knowledge-based theory, which highlights the significance of KM practices in achieving superior productivity, financial and human resource performance, ultimately leading to a sustainable competitive advantage (Prahalad & Hamel, 1994; Drucker, 1993).

In today's dynamic market, success hinges on adaptability and intelligent strategies (Teece, 2007a). Recognizing this, numerous researchers have developed conceptual models based on the knowledge-based theory, identifying critical KM practices that organizations can leverage to thrive (Alavi & Leidner, 2001; Boisot & Jay, 1995). Implementing these practices effectively positions organizations to not only survive but excel in the face of ongoing competition.

The concept of knowledge management (KM) practices is multifaceted, with diverse definitions and applications across the literature. While various models exist, this research focuses on five core practices identified by prominent scholars. Knowledge identification means recognizing and locating valuable knowledge within the organization, drawing from both explicit and tacit sources (Nonaka et al., 1995). Knowledge acquisition deals with actively gathering and incorporating external knowledge resources alongside internal expertise (Dahiya et al., 2008). Knowledge storage is concerned with establishing efficient systems for capturing, archiving, and retrieving knowledge to ensure ongoing access and utilization (Bhatti & Qureshi, 2000). Knowledge dissemination is sharing and distributing knowledge throughout the organization through effective communication channels and collaboration tools (Wiig & Schultze, 2003). Knowledge application is putting knowledge into practical use, applying it to problem-solving, decision-making, innovation, and continuous improvement (Nissen et al., 2000). Selecting these five practices aligns with their frequent application in KM system evaluations, highlighting their essential role in ensuring organizational knowledge effectiveness (Alavi & Leidner, 2001b). By focusing on these core activities.

The cornerstone of effective knowledge management lies in uncovering existing knowledge within the organization. Without this critical step, redundancy and wasteful

duplication of efforts become inevitable (Argote & Ingram, 2000). This process delves into both explicit and tacit knowledge residing in individuals, documents, and organizational routines (Nonaka & Takeuchi, 1995). Once the internal knowledge landscape is mapped, organizations can strategically acquire additional expertise from diverse sources. Internal channels like employee experiences and expert insights complement external sources such as industry publications, competitor analysis, and targeted training programs (Boisot & Jay, 1995). A range of techniques, including interviews, process mapping, and concept mapping, facilitate effective knowledge acquisition (Dahlgren, 1995). The lifeblood of any knowledge-based organization is the efficient exchange of both personal and organizational knowledge. This process facilitates the transfer of wisdom from individuals to groups, across teams, and even between organizations (Szulanski, 2003). Effective communication channels, collaborative platforms, and knowledge-sharing practices are crucial for successful knowledge dissemination (Alavi & Leidner, 2001). Capturing and retaining both individual and organizational knowledge is critical for future accessibility and utilization. This involves a blend of technological solutions, utilizing modern hardware and software systems, and human processes for effective indexing and retrieval (Zack, 2013). Robust knowledge storage systems empower organizations to leverage their accumulated knowledge capital for ongoing learning, innovation, and competitive advantage (Gupta & Govindarajan, 2000).

Effectively structuring and organizing organizational knowledge ensures its retrievability and usability by individuals within the organization (Boisot & Jay, 1995). This involves creating systems for cataloging, indexing, and accessing knowledge assets, both explicit and tacit, to facilitate smooth knowledge flow and utilization. Putting knowledge into action is where its true value shines. This involves applying existing knowledge to inform decision-making, improve performance across all levels, and ultimately achieve organizational goals (Gupta & Govindarajan, 2000). Effective knowledge application integrates knowledge into the organization's core operations, impacting services, processes, and products (Zack, 2013). This continuous learning and refinement through knowledge application enables organizations to gain and sustain a competitive advantage (Alavi & Leidner, 2001).

Gauging the success of a firm is the bedrock of management research, with firm performance acting as the ultimate litmus test. Scholars have underscored its paramount importance, focusing on enhancing performance through diverse strategic levers, including robust knowledge management practices (Dahiya et al., 2008). Numerous studies have translated the concept of firm performance into tangible metrics, encompassing diverse aspects like return on assets, sales growth, and new product success (Volberding & Lewin, 2004). Additionally, measures like market share, overall performance (Prahalad & Hamel, 1994), profitability, and customer satisfaction (Teece, 2007b) provide a multifaceted understanding of a firm's effectiveness.

The concept of organizational performance remains multifaceted, lacking a definitive set of universally accepted metrics. Researchers employ diverse measures suited to their specific context and research focus (Venkatraman & Ramanujam, 2014). Traditionally, studies relied on financial indicators like return on equity and investment, alongside operational measures like market share and growth (Volberding & Lewin, 2004). However, broader sets of indices encompassing factors like effectiveness, efficiency, productivity, employee satisfaction, and innovativeness have gained traction (Johnsen & McMahon, 2008; Koh et al., 2008; Huang, 2012). The link between knowledge management (KM) practices and firm performance is attracting increasing attention. While conclusive evidence remains elusive, growing evidence

suggests a positive correlation. Roland (2007) emphasizes the critical role of integrating knowledge into core strategies and value creation processes for achieving high performance. Similarly, Noruzy et al. (2014) found a positive link between KM and performance in manufacturing firms. Expanding on this, Garcia-Morales et al. (2013) propose that strategic knowledge variables like knowledge slack, absorptive capacity, and tacitness can positively mediate the relationship between transformational leadership and performance. According to the reviewed literature, we propose the following hypotheses.

*H<sub>1</sub>: Knowledge management practices positively influence the effectiveness of knowledge management systems.*

*H<sub>2</sub>: An efficient Knowledge management system positively influences organizational performance.*

## Methods

This study employed a robust research methodology to investigate the relationship between knowledge management practices and firm performance in Indian IT companies. Prior to the main survey, a pre-test conducted with 30 senior managers ensured the instrument's reliability, as evidenced by acceptable Cronbach's Alpha values exceeding 0.7 (Cronbach, 1951). The main survey targeted 500 senior and middle-level managers from 100 IT companies with over 50 employees. Over a one-month period, 310 complete responses were received, translating to a 62% response rate at the company level and a 20% response rate from individual managers. This participation rate suggests adequate representation of the target population. The knowledge management practices instrument, adapted from established sources like Cho 2009; Chen and Huang (2009); Chen and Liang (2008); Fugate et al. (2008) comprised five components: knowledge acquisition, storage, identification, dissemination, and application. A five-point Likert scale measured these components (strongly disagree = 1, strongly agree = 5). Confirmatory factor analysis confirmed the instrument's validity and reliability, indicating its suitability for measuring KM practices in the context of Indian IT firms. Similarly, a five-component scale adapted from (Cho et al. 2010); Chen and Liang; Fugate et al. measured firm performance. These components included firm productivity, financial performance, employee performance, innovativeness, and customer satisfaction. Again, a five-point Likert scale facilitated measurement, and confirmatory factor analysis established the scale's validity and reliability for assessing organizational performance within the research context. As shown in Table 1, the respondents possessed significant experience and familiarity with KM activities, solidifying their suitability as participants in the survey.

This study employed structural equation modeling (SEM) to assess the suitability of the proposed model and rigorously evaluate the relationships between constructs. To ensure the validity and reliability of the measurement constructs, several established statistical procedures were implemented. Based on factor loadings, items exhibiting correlations of 0.5 or higher with their respective constructs were retained, adhering to recommendations by Hair et al. (2018) and Hair et al. (2020). This procedure ensured that only relevant items contributed to the analysis. Cronbach's alpha was used to assess the internal consistency of each construct. As Nunnally (1975) and Nunnally and Bernstein (1994) suggest, alpha values exceeding 0.7 are considered good, while values between 0.6 and 0.7 are acceptable in social science research. This study's analyses confirmed adequate reliability for all constructs. Confirmatory factor analysis with maximum likelihood estimation in AMOS 20.0 was conducted to evaluate the overall model fit.

Following Cole's (2007) recommendations, six key criteria were used: chi-square goodness-of-fit, GFI, AGFI, RMSEA, CFI, and RMR. These measures assessed various aspects of model fit, including chi-square's sensitivity to sample size, the model's ability to reproduce the observed data, and the level of parsimony. Additionally, average variance extracted (AVE) and construct reliability were calculated for each construct. These measures provided further evidence of convergent validity (adequate variance captured by each construct) and discriminant validity (distinctness between constructs). By employing these rigorous procedures, this study established the appropriateness of the proposed model and the validity and reliability of the measurement constructs, strengthening the overall confidence in the research findings.

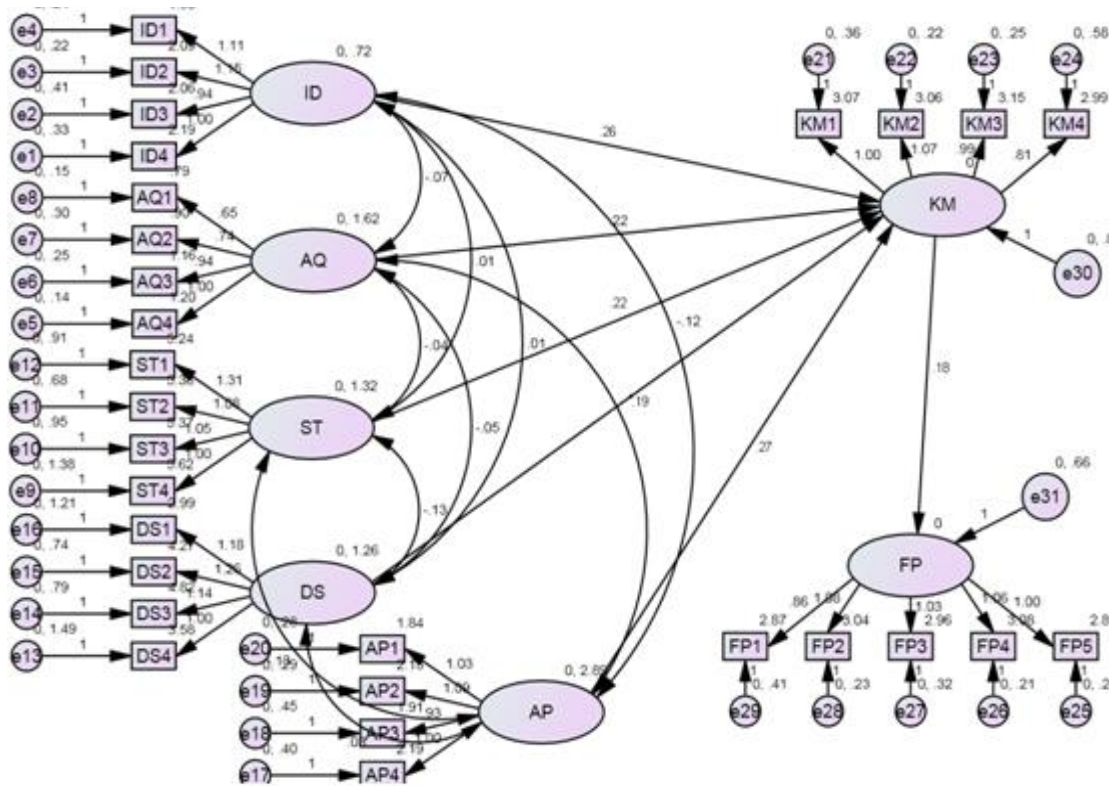
|  | <b>Number</b> | <b>Percentage</b> |
|--|---------------|-------------------|
| Peripherals (Computer)                     | 20            | 20                |
| Software                                   | 80            | 80                |
| Total                                      | 100           | 100               |
| <b><i>Job Classification</i></b>           |               |                   |
| Top IT/MIS Managers                        | 90            | 29                |
| Lower-Middle IT/MIS Managers               | 220           | 71                |
| Total                                      | 310           | 100               |
| <b><i>Employment in the company</i></b>    |               |                   |
| Less than 3 years                          | 10            | 3                 |
| 3-5 Years                                  | 110           | 35                |
| 6-10 Years                                 | 181           | 58                |
| More than 10 Years                         | 9             | 4                 |
| Total                                      | 310           | 100               |
| <b><i>Involvement in KM activities</i></b> |               |                   |
| Fully Involved                             | 88            | 28                |
| Partially Involved                         | 222           | 72                |
| Not involved                               | 0             | 0                 |
| Total                                      | 310           | 100               |

## **RESULTS AND DISCUSSION**

Figure 1 highlights the positive impact of knowledge management practices (KM practices) on knowledge management systems (KMS) and the subsequent influence of efficient KMS on firm performance. Specifically, the figure shows significant positive relationships between each KM practice (knowledge identification, acquisition, storage, dissemination, and application) and the overall KMS effectiveness. Furthermore, efficient KMS are a significant driver of improved firm performance across all key components: firm productivity, financial performance, employee performance, innovativeness, and customer satisfaction.

Table 2 presents the model fit indices obtained through confirmatory factor analysis using AMOS 20.0. These indices indicate that the proposed model adequately captures the relationships between the constructs. Chi-square and degrees of freedom (CMIN/DF): 1.478. While the chi-square statistic is sensitive to sample size and often non-significant in large samples, this value falls within the acceptable range, suggesting no major deviation between the model and the observed data. Comparative fit index (CFI), goodness-of-fit index (GFI), and adjusted goodness-of-fit index (AGFI): 0.974, 0.932, and 0.900, respectively, all exceeding the

recommended threshold of 0.9, indicating good model fit and parsimony. Root mean square residual (RMR) and root mean square error of approximation (RMSEA): 0.042 and 0.039, respectively, both well below the cut-off of 0.05, further supporting the model's adequacy in replicating the observed data. The model demonstrates a strong fit to the data, providing confidence in the validity of the proposed relationships between the constructs.



**FIGURE 1**  
**RESULTS OF THE STRUCTURAL EQUATION MODEL**

|       | $\chi^2$ | $\chi^2/df$ | GFI   | AGFI  | CFI   | RMR   | RMSEA | p    |
|-------|----------|-------------|-------|-------|-------|-------|-------|------|
| Value | 533.67   | 1.478       | 0.932 | 0.900 | 0.974 | 0.042 | 0.039 | 0.00 |

To ensure the constructs measured distinct concepts and captured enough variance, we examined their convergent and discriminant validity. Convergent validity was assessed through average variance extracted (AVE), which indicates how much variance in the indicator items is explained by the underlying construct. All AVE values in Table 3 exceeded 0.5, exceeding the recommended threshold and confirming good convergent validity. Discriminant validity was checked by comparing AVE values to the squared inter-construct correlations (SIC) in Tables 4, 5. As all AVE values were higher than their corresponding SICs, discriminant validity was established. This means the constructs are distinct from each other and not simply measuring the same thing.

| <b>Table 3</b>                    |                        |             |                  |       |
|-----------------------------------|------------------------|-------------|------------------|-------|
| <b>AVERAGE VARIANCE EXTRACTED</b> |                        |             |                  |       |
| Factor                            | Loadings-<br>$\lambda$ | $\lambda^2$ | $\sum \lambda^2$ | AVE   |
| Knowledge Acquisition(AQ)         | 0.959                  | 0.9196      | 3.3475           | 0.836 |
|                                   | 0.923                  | 0.8519      |                  |       |
|                                   | 0.867                  | 0.7516      |                  |       |
|                                   | 0.908                  | 0.8244      |                  |       |
| Knowledge Storage(ST)             | 0.699                  | 0.4886      | 2.5035           | 0.625 |
|                                   | 0.777                  | 0.6037      |                  |       |
|                                   | 0.834                  | 0.6955      |                  |       |
|                                   | 0.846                  | 0.7157      |                  |       |
| Knowledge Dissemination(DS)       | 0.676                  | 0.4569      | 2.4531           | 0.613 |
|                                   | 0.821                  | 0.6740      |                  |       |
|                                   | 0.854                  | 0.7293      |                  |       |
|                                   | 0.770                  | 0.5929      |                  |       |
| Knowledge Application(AP)         | 0.937                  | 0.8779      | 3.5617           | 0.890 |
|                                   | 0.920                  | 0.8464      |                  |       |
|                                   | 0.960                  | 0.9216      |                  |       |
|                                   | 0.957                  | 0.9158      |                  |       |
| Knowledge Identification(ID)      | 0.887                  | 0.7867      | 2.8941           | 0.724 |
|                                   | 0.900                  | 0.8100      |                  |       |
|                                   | 0.778                  | 0.6052      |                  |       |
|                                   | 0.832                  | 0.6922      |                  |       |
| Efficient KM system(KM)           | 0.848                  | 0.7191      | 2.8428           | 0.711 |
|                                   | 0.908                  | 0.8244      |                  |       |
|                                   | 0.887                  | 0.7867      |                  |       |
|                                   | 0.716                  | 0.5126      |                  |       |
| Firm Performance(FP)              | 0.740                  | 0.5476      | 3.5112           | 0.702 |
|                                   | 0.877                  | 0.7691      |                  |       |
|                                   | 0.829                  | 0.6872      |                  |       |
|                                   | 0.884                  | 0.7814      |                  |       |
|                                   | 0.852                  | 0.7259      |                  |       |

This research underscores the critical role of effective knowledge management (KM) activities in driving efficient knowledge management systems (KMS). Organizations must diligently assess their knowledge needs to avoid redundancy and waste. Once identified, acquiring the right knowledge, storing it securely and accessibly, and then disseminating it to the right people at the right time are crucial steps for maximizing KMS efficiency. Ultimately, efficient KMS directly translate into improved firm performance across key areas like financial health, employee engagement, innovation, productivity, and customer satisfaction. This emphasizes the need for organizations to prioritize and invest in KM activities to achieve overall success. To enhance KMS efficiency, organizations should follow a structured approach to knowledge management. This involves carefully identifying their knowledge gaps, acquiring the necessary information efficiently, storing it securely and readily accessible, and then effectively disseminating it to relevant individuals when they need it. By optimizing these KM activities, firms can unlock the full potential of their KMS, leading to improved performance across financial, employee, innovation, productivity, and customer satisfaction metrics. This highlights the importance of implementing practical KM strategies to achieve tangible business outcomes. This research establishes a strong link between efficient KMS and improved firm performance. By investing in effective KM activities, such as knowledge identification, acquisition, storage,

and dissemination, organizations can unlock significant benefits in key areas like financial health, employee engagement, innovation, productivity, and customer satisfaction. This emphasizes the need for organizations to view KM as a strategic investment that directly contributes to their overall success. Efficient KMS, driven by effective KM activities, leads to better firm performance across various metrics. Organizations should prioritize KM improvement for overall success (Choong, 2006; Alavi & Leidner, 2001); (Kwon & Oh, 2011; Hsu & Chen, 2010).

| <b>Construct</b>             | <b>Reliability</b> |
|------------------------------|--------------------|
| Knowledge Acquisition(AQ)    | 0.947              |
| Knowledge Storage(ST)        | 0.866              |
| Knowledge Dissemination(DS)  | 0.863              |
| Knowledge Application(AP)    | 0.970              |
| Knowledge Identification(ID) | 0.901              |
| Efficient KM system(KM)      | 0.911              |
| Firm Performance(FP)         | 0.921              |

| <b>Construct</b> | <b>AQ</b>    | <b>ST</b>    | <b>DS</b>    | <b>AP</b>    | <b>ID</b>    | <b>KM</b>    | <b>FP</b>    |
|------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>AQ</b>        | <b>0.836</b> |              |              |              |              |              |              |
| <b>ST</b>        | 0.000        | <b>0.625</b> |              |              |              |              |              |
| <b>DS</b>        | 0.001        | 0.010        | <b>0.613</b> |              |              |              |              |
| <b>AP</b>        | 0.108        | 0.004        | 0.000        | <b>0.890</b> |              |              |              |
| <b>ID</b>        | 0.004        | 0.000        | 0.000        | 0.067        | <b>0.724</b> |              |              |
| <b>KM</b>        | 0.062        | 0.000        | 0.015        | 0.000        | 0.003        | <b>0.711</b> |              |
| <b>FP</b>        | 0.108        | 0.000        | 0.022        | 0.021        | 0.027        | 0.006        | <b>0.702</b> |

## CONCLUSION

Building on established research this study emphasizes the critical role of effective knowledge management (KM) activities in enhancing organizational performance. It identifies five core KM practices: knowledge identification, acquisition, storage, dissemination, and application. These practices contribute significantly to efficient knowledge management systems (KMS), which in turn, directly improve key performance indicators (KPIs) like productivity, financial performance, employee performance, innovativeness, and customer satisfaction. The findings highlight that when firms accurately identify their knowledge needs, strategically acquire and store relevant information, and effectively disseminate it across organizational levels, they empower employees to tackle challenges, innovate, and ultimately drive performance improvements. In today's dynamic environment, continuous knowledge acquisition, creation, sharing, and implementation are crucial for making informed strategic decisions, fostering better work relationships, and exceeding customer expectations. Therefore, leadership commitment to establishing a supportive KM culture becomes paramount. By motivating employees and supervisors to actively engage in KM practices, organizations can unlock the full potential of their KMS and reap significant benefits across various performance metrics. This study



significantly contributes to the existing knowledge by providing practical insights into implementing effective KM practices for improved organizational performance. It underscores the direct link between robust KM and increased productivity, financial stability, employee engagement, innovation, and customer satisfaction.

### Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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